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WOODCOCK STATUS REPORT

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Special Scientific Report--Wildlife No. 92



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WOODCOCK STATUS REPORT, 1965

by
William H. Goudy and Fant W. Martin*.
Migratory Bird Populations Station
Division of Wildlife Research



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ABSTRACT

Singing-ground surveys of American woodcock indicate that breeding populations have increased gradually over the past 7 years while production, as indicated by wing-collection surveys, has remained relatively stable. The woodcock harvest, meanwhile, has probably more than doubled during the past decade. This suggests that while woodcock are probably becoming more important to North American sportsmen, hunting mortality is still relatively unimportant.

Banding is one of the most important elements in the study of migratory game bird populations. Over 3,100 woodcock were banded in North America during 1965, with major programs conducted in Louisiana, Maine, Michigan, and West Virginia.

A woodcock singing-ground study was recently completed at Michigan State University and another initiated by the University of Maine. West Virginia's Department of Natural Resources began a 3-year investigation of woodcock population dynamics in 1965, and the Pennsylvania Game Commission published a popularized version of its woodcock management study. Random singing-ground survey routes were established in West Virginia and the Upper Peninsula of Michigan in 1965 and will be extended to other States in the future.

INTRODUCTION

The American woodcock (Philohela minor) provides hunting in a habitat of eastern North America usually unoccupied by other game birds. Although classified as a "shore bird" because of its structural characteristics, the woodcock is primarily an inhabitant of wooded areas. It satisfies the sportsmen's requirement as an excellent game bird since it holds well to pointing dogs, is usually quite abundant, and presents an elusive target. Other outdoor enthusiasts are intrigued by its peculiar physical characteristics and unusual courtship antics.

The woodcock breeds throughout the eastern United States and Canada. It nests most abundantly in northern States and Provinces from Nova Scotia to eastern Minnesota. Most woodcock winter in the Southeast; Louisiana in particular provides important habitat. In recent years, the woodcock has been hunted from September in the North through January in the southeastern States.

To effectively manage woodcock for both the hunting and the nonhunting public, its population status and the effect of hunting on the population must be known. While we are now making progress toward this objective, it is important that we expand and accelerate research to insure the continuance of woodcock hunting.

Appreciation is expressed to the many individuals who participate in the annual woodcock singing-ground and wing-collection surveys. Special recognition is hereby expressed to the Canadian Wildlife Service for conducting their third consecutive woodcock wing-collection survey during the fall of 1964. This cooperation has greatly increased the quality and value of productivity information from important woodcock breeding grounds in the eastern Provinces of Canada. This report would not be possible without the cooperation of State and Provincial conservation departments as well as personnel in Regions III, IV, and V of the Bureau who are responsible for the operation of the spring singing-ground surveys.

WOODCOCK POPULATION TRENDS

Two major surveys are conducted in eastern North America each year to obtain information about the population status of American woodcock. The first, a singing-ground survey, is conducted each spring in most States and Provinces where woodcock nest. The purpose of this survey is to obtain an index of breeding population size. The second is a wing-collection survey conducted during the hunting season to obtain (1) an index of reproductive success, (2) information concerning size and distribution of the kill, (3) information on the frequency of various bag sizes, and (4) an estimate of the number of days individuals hunt woodcock.

Singing-ground survey Each spring male woodcock engage in courtship activity at dawn and at dusk. This performance consists primarily of characteristic ground calls ("peents") and aerial wing and vocal sounds ("flight songs") emitted from grassy openings among shrubs or trees. Such openings are called singing-grounds, and the count of male woodcock utilizing them is the only practical method known for determining the status of the breeding population. More than 400 singing-ground survey routes are conducted each spring by cooperators scattered throughout eastern North America.

In counting, the cooperator travels by car to predetermined listening points (stops) at least 0.4 mile apart along a route previously selected. Counts are usually conducted on warm, windless evenings beginning 5 to 30 minutes after sunset (depending on the amount of cloud cover) and ending 35 minutes later. Routes are normally 3 to 4 miles long with the number of stops depending on the amount of suitable woodcock habitat. Counts of 2 minutes' duration are made at the same stops each spring, and at each, the number of different "singing" male woodcock is recorded. The average number of woodcock heard per route (on comparable routes conducted in 2 consecutive years) is used as an index to the size of the breeding population. This figure weights each route in proportion to the number of "singing" males present. It is preferable to average woodcock heard per stop for each route, which gives each route equal weight, even though some routes

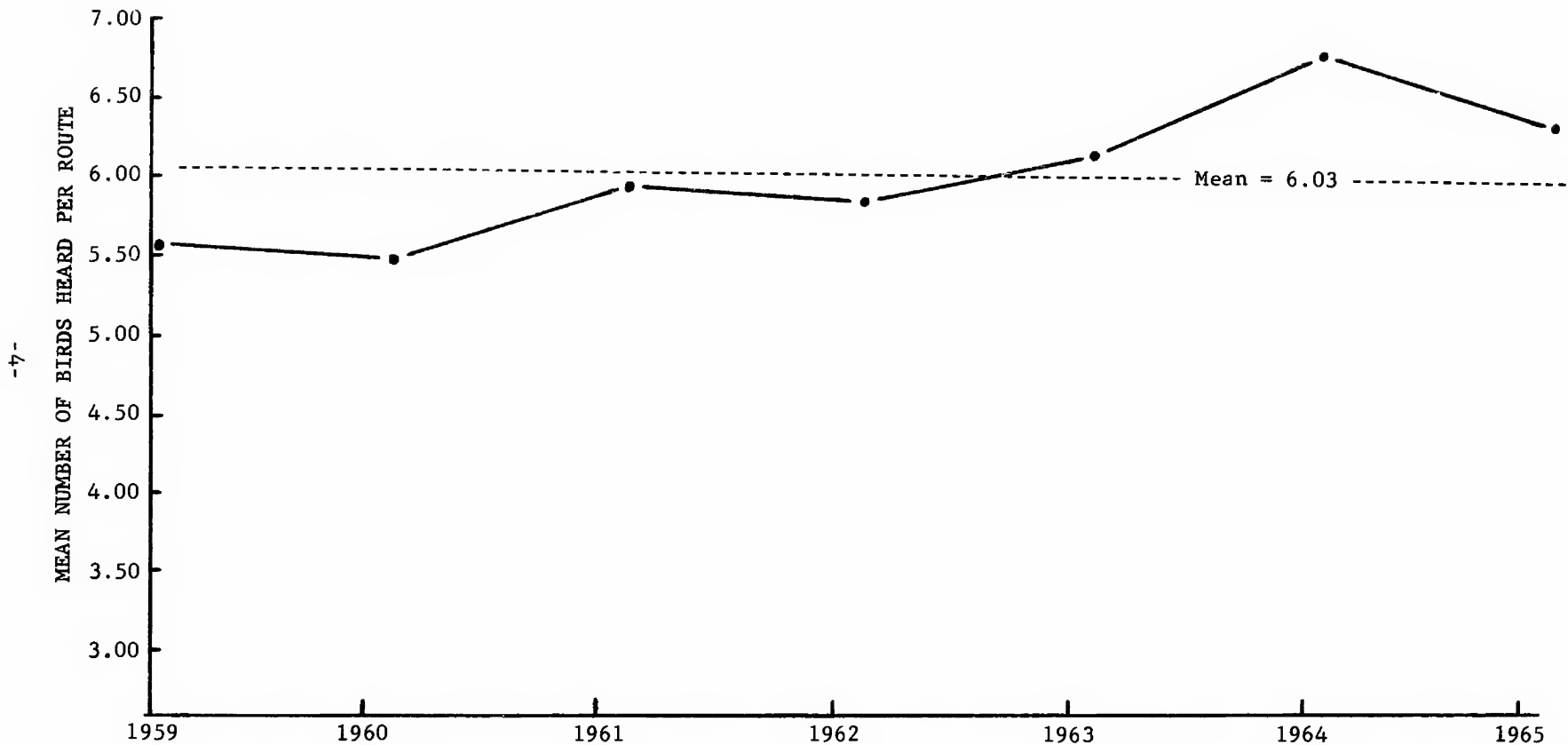
have more stops than others. Data from each route in 1964 and 1965 were examined for comparability, and adjustments were made for differences in the operation of the same route. When survey information from different States and Provinces is combined, it must be weighted again because the number of routes in each area is not necessarily related to woodcock population size. A more detailed discussion of the singing-ground survey and associated weighting factors may be found in the 1964 Woodcock Status Report (Special Scientific Report --Wildlife No. 88, U. S. Fish and Wildlife Service).

An index to the 1965 woodcock breeding population was obtained from 284 comparable singing-ground routes in 4 Canadian Provinces and 20 eastern and central States. The population index was down less than 1 percent east of the Appalachians and approximately 11 percent west of the mountains. For the combined regions, the weighted 1965 population index was 6.5 percent below 1964's (table 1). Previous analyses have indicated that changes of this magnitude could have occurred from chance. It seems doubtful whether the North American breeding population changed significantly from 1964 to 1965. Results from each route conducted in 1964 and 1965 are compared in table 7.

Recent trends in woodcock breeding populations, as indicated by weighted singing-ground surveys, are shown in table 2. Breeding woodcock are apparently increasing a little in the Western Region and remaining relatively stable in the East. When these indexes are combined and adjusted to compare with 1965's index (as the base year), a gradually increasing North American breeding woodcock population is apparent (graph I).

Wing-collection survey An annual measure of reproductive success also helps to determine woodcock population status. Reproductive success is measured by the ratio of immature birds to adult females in the fall bag. Since woodcock can be aged and sexed by examining their wing feathers, a wing-collection survey was initiated in 1959. The response of hunters during the past 6 hunting seasons has been outstanding. They have contributed an average of 12,200 wings annually and last year (1964) more than 15,000 wings were received at the Migratory Bird Populations Station (table 3). The number of

GRAPH I.--TRENDS IN BREEDING WOODCOCK POPULATIONS IN NORTH AMERICA
AS INDICATED BY SPRING SINGING-GROUND SURVEYS



immatures per adult female has varied considerably among States and Provinces, and within these harvest areas, between years. Some of this variation was probably caused by differences in hunting season dates, weather, and closures because of fire hazard. Nevertheless, overall weighted age ratios have not varied more than 4 percent from a 6-year mean of 1.81 immatures per adult female, suggesting little change in woodcock productivity continentwide since 1959. Note, however, that since 1961 (when the highest rate of 1.88 immatures per adult female was obtained), ratios have decreased annually to 1.77 in 1964. Table 4 compares 1963 and 1964 age ratios by State where killed.

The woodcock wing-collection survey also provides information necessary in establishing effective regulations. For example, it furnishes information on the distribution of the kill within the season, thus indicating some implications of earlier opening and later closing dates. It also provides information on the frequency with which various bag sizes are attained; this indicates effectiveness of daily bag limits in altering the harvest.

Harvest trends The effects of hunting on both continental and local woodcock populations are relatively unknown at present. However, trends in the annual woodcock harvest are indicated by kill surveys conducted in States and Provinces comprising more than half of their range (table 5). These data, although not based on statistically sound surveys in several instances, indicate that the woodcock harvest has more than doubled during the past decade. In fact, probably more than 750,000 woodcock were shot during the 1964 hunting season compared with an estimated 300,000 in 1954. Michigan ranks first in the North American harvest of woodcock with a 1964 kill of approximately 176,500. New York and Wisconsin also reported shooting more than 100,000 woodcock during the 1964 season. Other "known" primary harvest areas in recent years have been Maine and Massachusetts, with annual kills exceeding 30,000.

A systematic method of determining trends in the woodcock harvest was recently attempted using data from the wing-collection survey. A hunter-success index was obtained by determining the average number of wings returned by the same cooperators in 1963 and 1964. The analysis indicated that success was generally higher in the East but lower in the Lake States during the 1964 season. Despite variations in shooting success among States each year, there was apparently no change in the daily woodcock bag because, continentwide, the average number of wings per envelope remained the same when weighed by available kill estimates. The total number of wings submitted by these same cooperators, however, increased more than 15 percent in 1964. This suggests that the larger kill resulted from more trips afield during the 1964 season (table 6).

THE WOODCOCK BANDING PROGRAM

The banding of migratory game birds shortly before the hunting season provides valuable information for management. Recoveries from such woodcock bandings provide information on kill rates, annual mortality, the effects of hunting regulations on recovery rates, the extent to which different age and sex classes differ in their vulnerability to hunting, and the distribution of hunting mortality. The winter banding of woodcock provides information on annual mortality and sex differences in shooting pressure and survival. In combination, these two banding programs yield information on the time of year mortality occurs and thus suggests the importance of hunting as a mortality factor. As with waterfowl, summer banding data should reveal the relation between shooting pressure (as reflected by band recovery rates) and annual mortality. This will indicate whether hunting does, in fact, affect total mortality or simply replaces nonhunting mortality. High priority should be given the establishment of banding programs that sample summer and winter woodcock populations in a representative manner. Listed below are the present woodcock banding centers with a resumé of their recent activities.

Maine At Moosehorn National Wildlife Refuge the summer banding program, begun experimentally in 1962, was continued. Under the direction of Refuge Biologist Eldon R. Clark, the

refuge staff has banded an average of almost 400 woodcock each summer. These data are now being analyzed by Mr. Clark, Assistant Regional Refuge Supervisor Dale E. Sutherland, and personnel at the Migratory Bird Populations Station.

Michigan Larry E. Gregg, graduate student of Michigan State University, recently completed the first of a 2-year Bureau-sponsored study to (1) determine the comparative value of several woodcock capture techniques, (2) develop methods of locating woodcock "openings" where birds can be caught, and (3) determine the feasibility of initiating a large-scale banding program in Michigan. Mr. Gregg's auspicious start is emphasized by his capture of 265 woodcock during the summer of 1965 in Michigan's Upper Peninsula.

The Michigan Department of Conservation continued its emphasis on banding "local" woodcock in 1965 by capturing over 100 chicks and hens. Dr. G. A. Ammann has stimulated this program and is continually improving methods of capturing woodcock broods.

West Virginia West Virginia's Department of Natural Resources started a banding program in 1965 and Game Biologist Robert C. Kletzly succeeded in capturing over 100 birds this past summer and fall. Among other objectives, this study will provide information on migrational homing--the frequency with which migrant woodcock use the same area each year. This has an important bearing on whether "local" populations or areas can be "shot-out."

Louisiana During the winter of 1964-65, the Louisiana Cooperative Wildlife Research Unit conducted the most successful woodcock banding operation to date. From mid-December to mid-February, Unit Leader John D. Newsom and Louisiana State University wildlife management students banded over 2,500 birds on their nocturnal feeding fields near Baton Rouge.

OTHER WOODCOCK RESEARCH ACTIVITIES

West Virginia initiates woodcock research program One of the most important developments in the North American woodcock program during 1965 was the initiation of a population

dynamics study by the West Virginia Department of Natural Resources. Under the original guidance of Game Biologist James M. Ruckel and biologists at the Migratory Bird Populations Station, a program was developed which includes (1) random selection of singing-ground survey routes throughout the State, (2) a Statewide wing-collection survey, and (3) intensive live trapping, banding, and hunting investigations in a 50-square mile area called the Canaan Valley. These studies will provide information on (1) the distribution of woodcock breeding in West Virginia, (2) the effect of shooting mortality on woodcock, and (3) the relation between spring singing-ground counts and actual breeding populations.

Singing-ground study completed in Michigan During 1964, Michigan State University graduate student Gary E. Duke completed a 2-year Bureau-sponsored study which he reported in a thesis entitled, "Study of the Reliability of Censuses of Singing Male Woodcock." He concluded that: (1) woodcock surveys can be most affected by the time during the breeding season when counts are made and by the hearing ability of the observer; (2) except when extreme, climatic conditions are not important in influencing the survey; (3) survey results are not lowered by counting "flight songs" as well as "peents;" (4) reliability of the survey is not altered significantly by the full moon period; (5) courtship activity is not seriously affected by the density of performing males or by the stage of the brood cycle.

Pennsylvania publishes woodcock bulletin The Pennsylvania Game Commission recently released a 32-page bulletin entitled, "The American Woodcock in Pennsylvania," by Game Biologist Steve Liscinsky. This well written and illustrated publication includes chapters on reproduction, food and feeding behavior, movements and migration, habitat requirements, habitat management, and hunting.

Maine studies homing tendency of male woodcock University of Maine student Allen H. Holmes began a study in the spring of 1965 to determine the extent of homing by male woodcock during the breeding season. His initial results were not conclusive and it is expected that this study will be continued.

Randomization of singing-ground surveys continues Routes now used in the woodcock singing-ground survey are not randomly distributed in all types of habitat. Thus, counts on these routes may not necessarily reflect true annual changes in the relative number of breeding woodcock. The Michigan Department of Conservation has been conducting studies (since 1962) to determine the feasibility of employing randomly selected routes. During the spring of 1965, a similar study was initiated by West Virginia's Department of Natural Resources. Preliminary analysis of these data indicate that indexes to breeding population size from counts on randomly selected routes are more reliable than those obtained from presently used routes. Establishment of randomly selected singing-ground routes throughout all of the important woodcock breeding range is one of the present objectives of the Bureau's woodcock program.

Table 1.--Number of breeding male woodcock heard on comparable singing-ground routes in 1964 and 1965

State or Province	Total number of comparable routes	Adjusted total number of woodcock heard		Number of woodcock heard per route		Percent change woodcock heard route from 1964
		1964	1965	1964	1965	
<u>EASTERN REGION</u>						
Connecticut	13	47	46	3.62	3.54	
Delaware	1	6	7	6.00	7.00	
Maine	34	361	326	10.62	9.59	
Maryland	3	5	10	1.67	3.33	
Massachusetts	8	61	77	7.63	9.63	
New Brunswick	4	38	46	9.50	11.50	
New Hampshire	11	64	70	5.82	6.36	
New Jersey	2	11	11	5.50	5.50	
New York	28	180	174	6.43	6.21	
North Carolina	8	12	14	1.50	1.75	
Nova Scotia	11	92	82	8.36	7.45	
Pennsylvania	21	187	171	8.90	8.14	
Prince Edward Island	2	15	12	7.50	6.00	
Vermont	5	50	41	10.00	8.20	
<u>REGIONAL TOTALS AND WEIGHTED AVERAGES*</u>						
	151	1,129	1,087	6.94*	6.91*	- 0.4%*
<u>WESTERN REGION</u>						
Illinois	4	10	13	2.50	3.25	
Indiana	6	74	73	12.33	12.17	
Iowa	9	16	14	1.78	1.56	
Kentucky	9	4	9	0.44	1.00	
Michigan	61	675	619	11.07	10.15	
Minnesota	11	88	76	8.00	6.91	
Ohio	8	85	67	10.63	8.38	
Ontario	2	13	10	6.50	5.00	
West Virginia	10	41	46	4.10	4.60	
Wisconsin	13	71	73	5.46	5.62	
<u>REGIONAL TOTALS AND WEIGHTED AVERAGES*</u>						
	133	1,077	1,000	6.73*	5.98*	-11.1%
<u>NORTH AMERICAN TOTALS AND WEIGHTED AVERAGES*</u>						
	284	2,206	2,087	6.82*	6.38*	- 6.5%

* Weighted by the percent of total uncultivated land area within each State or Province

Table 2.--Comparison of woodcock singing-ground survey results for 1959-1965. The totals are weighted by the percent of total uncultivated land area within each region.

Years of comparison	EASTERN REGION			WESTERN REGION			CONTINENTAL NORTH AMERICA		
	Comparable routes	Birds heard per route	Percent change	Comparable routes	Birds heard per route	Percent change	Comparable routes	Birds heard per route	Percent change
1959 1960	166	7.14 6.43	-10%	40	5.29 5.68	+ 7%	206	6.18 6.06	- 2%
1960 1961	150	5.88 6.46	+10%	73	5.49 5.92	+ 8%	223	5.66 6.16	+ 9%
1961 1962	148	6.43 6.21	- 3%	115	5.46 5.44	0%	263	5.87 5.76	- 2%
1962 1963	161	6.19 5.76	- 7%	118	5.39 6.25	+16%	279	5.72 6.04	+ 6%
1963 1964	153	6.49 6.96	+ 7%	133	6.29 7.10	+13%	286	6.37 7.04	+11%
1964 1965	151	6.94 6.91	0%	133	6.73 5.98	-11%	284	6.82 6.38	- 6%

Table 3.--Total number of woodcock wings received in 1963 and 1964.

Harvest Areas	Number of Wings		Harvest Areas	Number of Wings	
	1963	1964		1963	1964
Connecticut	422	417	New York	874	1,648
Indiana	61	56	Nova Scotia	75	184
Louisiana	372	186	Ohio	159	240
Maine	1,802	2,835	Ontario	837	1,053
Massachusetts	514	563	Pennsylvania	750	1,422
Michigan	1,796	1,674	Quebec	459	251
Minnesota	545	424	Rhode Island	66	59
New Brunswick	1,065	658	Vermont	99	310
New Hampshire	370	689	West Virginia	140	313
New Jersey	778	789	Wisconsin	1,443	1,192
TOTAL WINGS FOR 1963 = 12,645*			TOTAL WINGS FOR 1964 = 15,058*		

* Totals include harvest areas from which less than 50 wings were received.

Table 4.--Age ratios determined from woodcock wings received from identical hunters in 1963 and 1964. Only States where 100 or more wings were obtained are listed.

State of kill	Proportion of "total" kill	Number of wings received		Immature per adult female		Percent change
		1963	1964	1963	1964	
Connecticut	.0598	275	296	2.77	2.12	
Louisiana		262	185	1.78	4.00	
Massachusetts	.0452	425	456	1.52	1.26	
Maine	.0990	1,541	2,362	1.55	1.69	
Michigan	.2650	1,461	1,284	1.73	1.54	
Minnesota		459	354	2.63	1.46	
New Hampshire		276	512	1.54	1.23	
New Jersey	.1108	495	611	2.57	2.46	
New York	.2605	680	989	1.36	1.52	
Ohio		114	185	1.38	2.23	
Pennsylvania	.0361	593	849	1.41	1.88	
West Virginia		119	206	1.69	3.14	
Wisconsin	.1237	1,070	964	2.10	2.22	
Totals & Weighted						
Age Ratios*	1.0001	7,770	9,253	1.80*	1.77*	- 1.7%

* Age ratios are weighted by multiplying them with the proportion of estimated average total spring kill from 1919-61 for the 8 States indicated.

Table 5.--Woodcock hunting kill estimates for three periods from 1951 through 1964.

State or Province	ESTIMATED AVERAGE ANNUAL HARVEST		
	1951-1955	1956-1960	1961-1964
Alabama	Unknown	Unknown	21,800
Connecticut	8,600	13,500	20,000
Florida	Unknown	Unknown	500
Indiana	Unknown	4,000	6,000
Kentucky	Unknown	3,100	4,500
Maine	19,400	24,700	37,600
Massachusetts	Unknown	13,700	29,400
Michigan	47,800	63,800	135,700
Minnesota	6,300	8,800	8,900
Mississippi	Unknown	Unknown	5,000
New Brunswick	3,100	6,500	---
New Jersey	18,600	Unknown	Unknown
New York	Unknown	92,200	91,500
North Carolina	8,300	Unknown	24,800
Nova Scotia	Unknown	17,000	---
Oklahoma	Unknown	Unknown	1,000
Pennsylvania	12,200	11,300	17,600
Prince Edward Island	Unknown	600	---
Quebec	Unknown	6,300	---
Rhode Island	Unknown	300	1,000
Vermont	Unknown	Unknown	2,500
West Virginia	Unknown	Unknown	11,000
Wisconsin	22,100	42,700	70,100
Total Estimated Average Harvest	284,000	437,000	651,000

Table 6.--Woodcock hunting success determined from response of identical cooperators participating in 1963 and 1964 wing-collection surveys. Only States from which 100 or more wings were received each year are listed.

State of residence	Number of cooperators	Number of wings received		Average number of wings per season		Average number of wings per envelope	
		1963	1964	1963	1964	1963	1964
Connecticut	34	352	317	10.4	9.3	3.2	2.9
Louisiana	5	242	172	48.4	34.4	7.3	7.8
Maine	56	1,417	2,165	25.3	38.7	4.2	4.7
Massachusetts	51	664	916	13.0	18.1	3.1	3.4
Michigan	85	1,392	1,227	16.4	14.4	3.3	3.1
Minnesota	21	529	436	25.2	20.8	5.8	5.0
New Hampshire	18	130	198	7.2	11.0	3.6	3.2
New Jersey	53	573	646	10.8	12.2	3.0	3.1
New York	80	629	959	7.9	12.0	3.2	3.3
Ohio	19	211	257	11.1	13.5	3.8	3.6
Pennsylvania	74	634	908	8.6	12.3	3.1	3.5
West Virginia	7	105	182	15.0	26.0	3.8	4.4
Wisconsin	75	1,008	885	13.4	11.8	3.7	3.4
Totals & Weighted Averages*	578	7,886	9,268	13.3*	15.4*	3.4*	3.4*

* Weighted averages are obtained by multiplying the proportion of estimated average total hunting kill from 1959-61 times the average number of wings.

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
CONNECTICUT								
1	Hartford Co. Glastonbury	M. Belden	8	8	1.00	2	8	0.25
2	Hartford Co. Barkhamsted #2	A. Lamson	5	11	0.45	4	10	0.40
3	Hartford Co. Farmington	R. Ballard**	0	6	0.00	1	6	0.17
5	Litchfield Co. Litchfield #1 & 2	M. Cherniske**	7	7	1.00	9	7	1.29
9	New Haven Co. Guilford-N. Branford	O. Beckley	1	6	0.17	2	6	0.33
10	New Haven Co. Guilford	O. Beckley	2	6	0.33	3	6	0.50
11	Tolland Co. Shenipsit #2	C. Dater**	4	7	0.57	6	7	0.86
12	Tolland Co. Shenipsit #3	C. Dater**	2	7	0.29	3	7	0.43
14	Hartford Co. Barkhamsted #1	A. Lamson	7	11	0.64	6	11	0.55
15	Litchfield Co. Sandtown Rd.	W. Sondrini	1	6	0.17	1	6	0.17
16	New London Co. Montville	W. Diffendall	2	6	0.33	2	6	0.33
17	Middlesex Co. Portland	M. Arnold	4	7	0.57	5	7	0.71
18	New Haven Co. Wallingford #1	D. DeCarli**	5	6	0.83	3	6	.50
TOTALS (unadjusted) 13 routes			48	94	0.51	47	93	0.51

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>DELAWARE</u>								
2	New Castle Co. Golts	T. Gallo & A. Florio	6	9	0.67	7	9	0.78
TOTALS (unadjusted) 1 route			6	9	0.67	7	9	0.78
<u>ILLINOIS</u>								
2	LaSalle Co. Dimmick Hill	C. Bavin	1	9	0.11	2	9	0.22
3	Mason Co. Havana	J. Salyer**	--	--	--	2	4	0.50
4	Bureau-Putnam Co. Arispie	R. VonDane	3	11	0.27	3	12	0.25
6	Williamson Co. A-13	J. Rice	2	10	0.20	4	11	0.36
7	Adams Co. Coatsburg	W. Kennedy	4	8	0.50	4	8	0.50
8	Mason Co. Havana #2	W. French	2	14	0.14	--	--	--
TOTALS (unadjusted) 6 routes			12	52	0.23	15	44	0.34
<u>INDIANA</u>								
3	LaGrange Co. Lima #1	D. Kennedy	18	6	3.00	21	6	3.50
4	LaGrange Co. Springfield #2	D. Kennedy	12	6	2.00	13	7	1.86
5	Newton Co. Beaver Lake	G. Baker**	--	--	--	5	9	0.56
6	Newton Co. Willow Slough	G. Baker**	--	--	--	8	8	1.00

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
INDIANA (continued)								
7	Pulaski Co. Franklin #1	K. Nettles	5	11	0.45	13	11	1.18
9	Kosciusko Co. Turkey Creek	R. Anderson	21	8	2.63	18	8	2.25
10	Jasper, Pulaski, & Starke Cos. Jasper-Pulaski	R. Hyer	27	14	1.93	33	14	2.36
11	Daviess Co. Glendale	R. Hamilton	7	6	1.17	5	6	0.83
12	Jennings Co. Crosley	B. Gahl	2	8	0.25	4	8	0.50
13	Henry Co. New Castle	D. Mann	--	--	--	7	6	1.17*
TOTALS (unadjusted) 10 routes			92	59	1.56	127	83	1.53
IOWA								
1	Allamakee Co. Luster Heights	G. Klonglan	3	8	0.38	1	8	0.13
2	Allamakee Co. Paint Creek	G. Hlavka	2	10	0.20	3	9	0.33
3	Allamakee Co. Sand Cove	G. Hlavka**	3	8	0.38	0	8	0.00
4	Clayton Co. Magill Creek	D. Hackbarth	2	9	0.22	3	7	0.43
5	Jasper Co. Rock Creek	G. Hlavka	0	8	0.00	0	8	0.00
6	Clayton Co. Buck Creek	D. Hackbarth	3	10	0.30	2	10	0.20
7	Winneshiek Co. Canoe Creek	G. Hlavka	0	10	0.00	0	9	0.00
8	Bremer Co. Wapsie River Bottoms	D. Dalziel	3	10	0.30	2	10	0.20

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>IOWA (continued)</u>								
9	Tama Co. Otter Creek	D. Cummings & G. Hlavka	0	10	0.00	--	--	--
10	Lucas Co. Colyn	J. Ripple & G. Hlavka	2	10	0.20	1	10	0.10
11	Louisa Co. Klum Lake	D. Vollink	2	9	0.22	--	--	--
12	Lee Co. Lick Creek	G. Hlavka	1	6	0.17	2	5	0.40
TOTALS (unadjusted) 12 routes			21	108	0.19	14	84	0.17
<u>KENTUCKY</u>								
4	Christian Co. Blue Hole Springs	C. Kays	0	9	0.00	0	9	0.00
7	Bullitt Co. Bardstown Jct.	J. Durell & R. Toon	1	10	0.10	1	10	0.10
14	Laurel Co. Highway 30	O. Bryant	2	10	0.20	4	10	0.40
15	McCreary Co. Creekmore	C. Stephens	0	10	0.00	1	10	0.10
17	Anderson Co. Van Buren Rd.	J. Durell & M. Shimfessell	0	10	0.00	1	10	0.10
18	Casey Co. Green River Valley	J. Storer	0	8	0.00	0	10	0.00
23	Edmonson Co. Mammoth Cave	D. Russell	0	8	0.00	0	7	0.00
25	Union Co. Camp Breckenridge	W. Parker	1	12	0.08	2	10	0.20
26	McCracken Co. W. Ky. Mgmt. Area	W. Lee	0	9	0.00	0	9	0.00
27	Bath Co. Mud Lick Creek	H. Barber	0	9	0.00	0	9	0.00
TOTALS (unadjusted) 10 routes			4	95	0.04	9	94	0.10

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MAINE								
2	Aroostook Co. Ashland	H. Carson	12	11	1.09	8	11	0.73
3	Aroostook Co. Oxbow	H. Carson	24	13	1.85	11	13	0.85
7	Aroostook Co. Hodgdon	H. Mendall	4	8	0.50	4	8	0.50
10	Franklin Co. Salem	R. Boettger	9	8	1.13	9	8	1.13
11	Hancock Co. Whalesback	J. Peppard	8	9	0.89	11	9	1.22
15	Hancock Co. Mud Creek (Lamoine)	J. Peppard	15	10	1.50	19	10	1.90
19	Kennebec Co. Readfield Depot	O. Seelye	11	9	1.22	13	9	1.44
20	Kennebec Co. Belgrade Stream	O. Seelye	12	10	1.20	10	10	1.00
21	Knox Co. St. George	K. Anderson	9	10	0.90	10	10	1.00
24	Penobscot Co. Greenbush	S. Schemnitz	16	10	1.60	21	10	2.10
27	Penobscot Co. Kenduskeag	D. Holmes	12	13	0.92	9	12	0.75
35	Piscataquis Co. T4, R10	I. Sargent	--	--	--	7	5	1.40
36	Piscataquis Co. Trout Brook	E. Damon	12	7	1.71	3	8	0.38
37	Sagadahoc Co. Bowdoinham (Ridge Rd.)	C. Tuttle	6	7	0.86	8	7	1.14
44	Waldo Co. Sandy Point	D. Holmes	11	9	1.22	7	7	1.00
45	Washington Co. Calais	H. Stanhope	5	5	1.00	5	5	1.00

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MAINE (continued)								
46	Washington Co. Charlotte #1	H. Mendall	12	7	1.71	15	7	2.14
47	Washington Co. Charlotte #2	H. Mendall	12	8	1.50	10	8	1.25
51	Washington Co. Alexander (Lake Rd.)	J. Dudley	11	6	1.83	--	--	--
52	Washington Co. Edmunds #1	A. Davis**	2	6	0.33	5	6	0.83
53	Washington Co. North Trail (1st half)	E. Clark**	2	7	0.29	5	7	0.71
53A	Washington Co. North Trail (2nd half)	A. Davis	2	6	0.33	4	6	0.67
54	Washington Co. Edmunds #3	S. McConvey**	8	9	0.89	6	9	0.67
59	York Co. Lyman	D. Marston	7	8	0.88	7	8	0.88
72	Cumberland Co. Hatch-Merril Br. Rd.	C. Beane	16	10	1.60	13	9	1.44
85	Kennebec Co. Sidney Line	K. Anderson	9	10	0.90	5	10	0.50
87	Kennebec Co. Belgrad Rt. 135	O. Seelye	9	10	0.90	7	10	0.70
90	Lincoln Co. Dresden Mills	R. Parks	10	8	1.25	6	9	0.67
99	Penobscot Co. No. Branford, Rt. 11	M. Smart	16	11	1.45	13	11	1.18
108	Piscataquis Co. Medford, Rt. 16	M. Smart	17	12	1.42	14	12	1.17
111	Piscataquis Co. Abbot	M. Smart	12	10	1.20	11	10	1.10
115	Sagadahoc Co. Georgetown Line	K. Anderson	11	10	1.10	12	10	1.20

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>MAINE (continued)</u>								
122	Waldo Co. Winterport	D. Holmes	5	11	0.45	5	10	0.50
123	Washington Co. Charlotte Sta. Rd.	H. Mendall	10	8	1.25	9	8	1.13
136	York Co. Maplewood	O. Seelye & H. Brown	11	8	1.38	6	8	0.75
138	Sagadahoc Co. Route #138	C. Tuttle	13	12	1.08	18	12	1.50
141	Franklin Co. New Sharon	R. Boettger	10	9	1.11	10	9	1.11
149	Somerset Co. E. New Portland	R. Boettger	10	9	1.11	13	9	1.44
151	Cumberland Co. Harpwell Neck	C. Huntington**	8	8	1.00	11	7	1.57
152	Washington Co. Meddybemps	H. Mendall	9	7	1.29	10	7	1.43
154	Cumberland Co. Brunswick	F. Whitman	16	11	1.45	--	--	--
156A	Kennebec Co. Oak Hill Rd.	C. Tuttle	14	10	1.40	7	10	0.70
156B	Washington Co. Edmunds #4	S. McConvey**	2	7	0.29	4	7	0.57
157	Kennebec Co. Fayette	O. Seelye	11	10	1.10	10	9	1.11
TOTALS (unadjusted) 44 routes			441	387	1.14	391	370	1.06

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>MARYLAND</u>								
4	Anne Arundel Co. Brock Bridge Rd.	C. Robbins	3	7	0.43	4	7	0.57
5	Howard Co. Vollmerhausen Rd.	A. Geis	2	6	0.33	6	5	1.20
6	Prince Geo. Co. Patuxent Wildl. Res. Ctr.	R. Tomlinson	1	9	0.11	1	9	0.11
TOTALS (unadjusted) 3 routes			6	22	0.27	11	21	0.52
<u>MASSACHUSETTS</u>								
3	Worcester Co. MDC Quabbin	W. Sheldon	10	14	0.71	13	14	0.93
4	Franklin Co. No. Leverett	E. Howard, Jr.	8	9	0.89	12	9	1.33
6	Franklin Co. Shutesbury #6	G. Hobart	11	9	1.22	8	9	0.89
7	Barnstable Co. Marston Mills	W. Fitzpatrick	11	11	1.00	15	11	1.36
8	Berkshire Co. Williamston	F. Richardson	4	7	0.57	8	7	1.14
9	Plymouth Co. Halifax & Plympton	J. DiCarlo	6	12	0.50	6	12	0.50
10	Franklin Co. Leverett	W. Sheldon	7	8	0.88	9	9	1.00
11	Plymouth Co. Halifax	J. Van Weelden	4	9	0.44	7	9	0.78
TOTALS (unadjusted) 8 routes			61	79	0.77	78	80	0.98

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MICHIGAN								
1	Alger-Schoolcraft Cos.		18	11	1.64	12	11	1.09
	Stutts Creek	L. Verme						
6	Chippewa Co.	R. Strong	23	10	2.30	18	10	1.80
	Drummond Island							
9	Clinton-Shiawassee Cos.		8	8	1.00	8	8	1.00
	Rose Lake	R. Huff						
13	Gladwin Co.	A. Boyce	16	10	1.60	17	10	1.70
	Cedar River							
15	Houghton Co.	R. Rafferty	13	7	1.86	5	6	0.83
	Hopes Creek							
18	Ingham Co.	D. Douglass	3	10	0.30	5	10	0.50
	Dansville Game Area							
19	Iron Co.	I. Thomson	16	10	1.60	10	10	1.00
	Lake Ellen							
24	Lake Co.	T. Fairbanks**	7	8	0.88	7	8	0.88
	Lake #1							
26	Luce Co.	L. Schemenauer	12	10	1.20	11	9	1.22
	McPhee's Ldg.							
30	Ogemaw Co.	J. Cook	19	10	1.90	18	10	1.80
	Greenwood Route							
32	Otsego Co.	O. Failing	5	7	0.71	5	7	0.71
	Ford #1							
34	Roscommon Co.	R. Blouch	11	11	1.00	14	11	1.27
	Block Plant							
35	Roscommon Co.	R. Blouch	16	10	1.60	12	10	1.20
	Michelson							
37	Baraga Co.	R. Rafferty	12	8	1.50	9	8	1.13
	Silver River							
38	Baraga Co.	R. Rafferty	21	10	2.10	12	10	1.20
	Clear Creek							
50	Mackinac Co.	L. Schemenauer	18	11	1.64	16	8	2.00
	Carp River #1							

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Bird stop
<u>MICHIGAN (continued)</u>								
63	Gladwin Co. Gladwin #2	A. Boyce	15	10	1.50	27	10	2.70
66	Luce Co. Natalie #2	L. Schemenauer	9	12	0.75	10	8	1.25
67	Mason Co. Mason Co. #1	T. Mackin	13	12	1.08	--	--	--
73	Otsego Co. Manistee	R. Rasmussen	11	10	1.10	14	11	1.27
76	Dickinson Co. Channing	I. Thomson	16	10	1.60	17	11	1.55
77	Manistee Co. Thompsonville	T. Fairbanks**	12	9	1.33	9	9	1.00
78A	Alpena Co. Alpena-No. Wellington	E. Phillips**	13	13	1.00	5	13	0.38
78B	Montmorency Co. Donnelly Truck Trail	D. Shetter	3	8	0.38	5	8	0.63
79	Antrim Co. Alba	F. Kellum**	22	10	2.20	5	10	0.50
80	Barry Co. Yankee Springs	C. Storkan	15	9	1.67	8	9	0.89
81	Cheboygan Co. Berry Creek	J. Linder**	5	7	0.71	2	8	0.25
83	Cheboygan Co. Tin Bridge	J. Linder**	25	9	2.78	5	9	0.56
85	Chippewa Co. Pendall's Creek Hatchery	P. Drake	4	3	1.33	4	3	1.33
86	Chippewa Co. Dunbar	R. Strong	13	10	1.30	11	10	1.10
87	Dickinson Co. Floodwood Rd. #1	Mrs. M. DeGayner	17	8	2.13	17	8	2.13
88	Gratiot Co. Gratiot-Saginaw #1	W. Palmer	18	10	1.80	18	10	1.80

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MICHIGAN (continued)								
89	Gratiot Co. Gratiot-Saginaw #2	R. Huff	21	12	1.75	20	11	1.82
90	Huron Co. Swamp Route	C. Braden	26	10	2.60	16	10	1.60
91	Kalamazoo Co. Hampton Lake	C. Cook	7	9	0.78	7	8	0.88
92	Midland Co. Homer Twp.	L. Line	8	14	0.57	3	10	0.30
93	Ontonagon Co. Matchwood	Mrs. R. Lahde	5	6	0.83	6	6	1.00
95	Ontonagon Co. Big Bear Airport	Mrs. R. Lahde	6	7	0.86	9	7	1.29
96	Osceola Co. Ewart	P. Baumgras**	10	9	1.11	4	9	0.44
97	Osceola Co. Doc & Tom Creek	R. Aartila	7	10	0.70	15	10	1.50
98	Otsego Co. Deer Camp Trail	H. Townsend	6	7	0.86	6	7	0.86
99	Van Buren Co. Wolf Lake Run	Ms. D. Beshgetoor	9	12	0.75	9	12	0.75
100	Antrim Co. North Jordan	F. Kellum**	25	9	2.78	11	9	1.22
101	Barry Co. Rutland	C. Storkan	13	9	1.44	4	9	0.44
102	Benzie Co. Little Betsie River	D. McBeath**	21	7	3.00	10	7	1.43
103	Cheboygan Co. Andy Grant Rd.	J. Linder**	12	4	3.00	7	9	0.78
104	Dickinson Co. Floodwood Plains	D. Wenzel	6	10	0.60	8	10	0.80
105	Emmet Co. Douglas Lake	F. Dufon	11	8	1.38	8	8	1.00
106	Emmet Co. E. Br. Maple Riv.	F. Dufon	12	8	1.50	14	8	1.75

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MICHIGAN (continued)								
107	Kalamazoo Co. Augusta	R. VanDeusen & J. Johnson	8	9	0.89	13	10	1.30
108	Kalamazoo Co. Gull L. Outlet	R. VanDeusen & J. Johnson	8	10	0.80	18	10	1.80
109	Lapeer Co. Deerfield-N. Br.	C. Douville	10	11	0.91	7	10	0.70
111	Tuscola Co. Apache	H. Tubbs	11	11	1.00	11	10	1.10
112	Tuscola Co. Wells	H. Tubbs	3	11	0.27	4	11	0.36
113	VanBuren Co. Whiskey Run	Mrs. D. Beshgetoor	6	10	0.60	8	10	0.80
115	Dickinson Co. Floodwood Rd. #2	Mrs. DeGayner	18	8	2.25	15	8	1.88
116	Gogebic Co. Erwin	J. Pann	12	12	1.00	10	11	0.91
117	Midland Co. Lee-Greendale	L. Line	17	14	1.21	17	14	1.21
118	Midland Co. Pine River	L. Line	12	8	1.50	14	8	1.75
119	St. Clair McClain Rd.	C. Douville	19	9	2.11	17	8	2.13
120	VanBuren Co. Lawton Creek	J. Cook	4	7	0.57	2	7	0.29
121	Allegan Co. Bear Creek	C. Friley	11	10	1.10	11	11	1.00
122	Delta Co. Perkins	J. Vogt	6	8	0.75	9	7	1.29
123	Dickinson Co. Wells Grade	D. Wenzel	18	10	1.80	8	10	0.80
124	Grand Traverse Co. Widenhammer	D. McBeath**	10	8	1.25	8	8	1.00
125	Ingham Co. Haslett	G. Ammann	6	7	0.86	9	7	1.29

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MICHIGAN (continued)								
126	Marquette Co. Valmer	T. Prawdzik	18	8	2.25	13	7	1.86
127	Schoolcraft Co. Co. Highway 436	G. Sherwood	12	9	1.33	10	9	1.11
128	Oscoda Co. Mio	J. Byelich	9	8	1.13	6	8	0.75
129	Gogebic Co. McDonald	J. Pann	11	11	1.00	11	11	1.00
130	Alger Co. Trout Lake	D. Frogness	22	9	2.44	6	7	0.86
131	Marquette Co. N. Greenwood	T. Prawdzik	18	7	2.57	15	7	2.14
132	Barry Co. Pitchfork Valley	R. VanDeusen	--	--	--	12	9	1.33*
TOTALS (unadjusted) 73 routes			903	667	1.35	747	651	1.15
MINNESOTA								
1	Cass Co. Longville #1	H. Pinkham	3	3	1.00	0	3	0.00
10	Itasca & Atkin Cos. Spang #1	J. Janeczek	8	7	1.14	8	7	1.14
11	Carlton Co. Exp. Forest	Dronen & ** McIlquham	--	--	--	5	10	0.50
12	Pine Co. Rutabaga Highway	B. Irwin	--	--	--	7	3	2.33
13	Pine Co. Fleming	B. Irwin	--	--	--	11	2	5.50
17	Carlton-St. Louis Cos. Rifle Range	L. Angell	9	8	1.13	7	8	0.88
22	Beltrami Co. Hines-Forest Highway	L. Johnson	1	7	0.14	--	--	--

* New route run in 1965

** 1964 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Bir stop
MINNESOTA (continued)								
23	Beltrami Co. Medicine Cut-Off	L. Johnson	4	9	0.44	--	--	--
24	Chisago Co. Lent Township	B. Fashingbauer	1	8	0.13	--	--	--
28	Mille Lacs Co. Headquarters Unit	O. Hagman	11	8	1.38	11	8	1.38
29	Mille Lacs Co. Quarry-Ranch Rd.	R. Alter	5	7	0.71	7	7	1.00
30	Morrison Co. Camp Ripley (SW)	B. Fashingbauer & J. Idstrom	4	7	0.57	4	7	0.57
31	Winona Co. Whitewater #1	G. Meyer**	--	--	--	1	6	0.17
32	Atkin Co. Refuge Boundary	C. Pospichal**	10	9	1.11	0	9	0.00
33	Mille Lacs Co. Korsness-Jones	O. Hagman	10	8	1.25	10	8	1.25
34	Mille Lacs Co. Schubert-Tower Rd.	R. Alter	8	8	1.00	6	8	0.75
35	St. Louis Co. J. Duluth, Normanna, & Fox Farm Rd.	Mrs. J. Green	15	9	1.67	8	9	0.89
36	Winona Co. Whitewater #2	N. Gulden	--	--	--	2	7	0.29
37	Winona Co. Whitewater #3	N. Gulden	--	--	--	3	5	0.60
38	Mille Lacs Co. Bock	L. Koopmann	6	8	0.75	--	--	--
39	Beltrami-Itasca Cos. Blackduck	L. Johnson	5	12	0.42	--	--	--
40	Kanabec Co. Spring Hill	L. Lindstrom	3	8	0.38	5	8	0.63
41	Koochiching Co. Rogers Rd.	M. Smith	14	7	2.00	12	7	1.71
42	Lake Co. Birch Lake North	P. Karns	--	--	--	5	10	0.50*

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
MINNESOTA (continued)								
43	Mille Lacs Co. Bock #2	L. Koopmann	--	--	--	6	8	0.75*
44	Pine Co. Chengwatana	B. Ellig	--	--	--	1	7	0.14*
45	Chisago Co. Sunrise Refuge	W. Longley	--	--	--	6	8	0.75*
46	Lake Co. Fernberg #2	P. Karns	--	--	--	7	9	0.78*
TOTALS (unadjusted) 28 routes			117	133	0.88	132	164	0.80
NEW BRUNSWICK								
6	Albert Co. Turtle Creek	H. Whitman	13	14	0.93	14	11	1.27
8	York Co. Richibucto Rd.	B. Wright	12	10	1.20	17	10	1.70
9	York Co. Kingley Bridge	N. Brown	7	10	0.70	9	10	0.90
10	York Co. Charter's Settlement	P. Pearce	11	10	1.10	--	--	--
11	York Co. Mazerol Settlement	B. Wright**	10	10	1.00	7	10	0.70
16	Westmorland Co. Berry's Mill Rd.	S. Whitman	4	12	0.33	11	8	1.38
17	Westmorland Co. Cape Breton Rd.	H. Whitman**	9	14	0.64	24	12	2.00
TOTALS (unadjusted) 7 routes			66	80	0.83	82	61	1.34
NEW HAMPSHIRE								
1	Coos Co. Pittsburg	C. Carlson	9	11	0.82	10	11	0.91

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>NEW HAMPSHIRE (continued)</u>								
2	Merrimack Co. No. Pembroke	H. Brown**	4	8	0.50	6	8	0.75
3	Merrimack Co. Pembroke Hill	H. Brown**	8	6	1.33	3	6	0.50
7	Strafford Co. Durham Pt. Rd.	H. Brown	7	7	1.00	4	7	0.57
8	Strafford Co. Rochester Rd.	H. Brown	5	8	0.63	12	8	1.50
9	Strafford Co. Tolend Rd.	H. Brown	8	9	0.89	12	9	1.33
10	Merrimack Co. Hopkinton-Webster	D. Allison	3	9	0.33	2	9	0.22
11	Merrimack Co. Pembroke	H. Lacaille	2	6	0.33	2	6	0.33
13	Rockingham Co. Mill Pond Rd.	H. Brown	5	10	0.50	5	9	0.55
15	Strafford Co. Mt. Misery Rd.	H. Brown	4	9	0.44	6	9	0.67
16	Strafford Co. Ten Rod Rd.	H. Brown	6	9	0.67	4	9	0.44
17	Merrimack Co. III No. Pembroke	H. Brown**	2	6	0.33	0	6	0.00
18	Rockingham Co. Bay Rd.	H. Brown	9	8	1.13	8	8	1.00
<u>TOTALS (unadjusted) 13 routes</u>			<u>72</u>	<u>106</u>	<u>0.68</u>	<u>74</u>	<u>105</u>	<u>0.70</u>

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
NEW JERSEY								
2	Atlantic Co. Tuckahoe	F. Ferrigno	8	9	0.89	9	10	0.90
3	Sussex Co. Walpack	R. Spinks	3	9	0.33	3	9	0.33
4	Cumberland Co. Haleyville P.S. Grnds.	E. Tomlin	3	10	0.30	2	10	0.20
5	Ocean Co. Manahawkin P.H. Grnds.	W. Shoemaker	0	4	0.00	6	4	1.50
6	Salem Co. Buttonwood Lane	L. Badger	--	--	--	12	12	1.00*
TOTALS (unadjusted) 5 routes			14	32	0.44	32	45	0.71
NEW YORK								
1	Albany Co. Partridge Run	D. Schierbaum	4	6	0.67	4	7	0.57
2	Albany Co. Dunbar Hollow	J. Kruzan**	2	10	0.20	2	11	0.18
5	Allegany Co. Hanging Bog	F. Zaik	6	8	0.75	3	8	0.38
7	Chenango Co. Pharsalia	P. Kelsey	7	9	0.78	2	9	0.22
8	Essex Co. Putnam Creek	G. Davis	8	11	0.73	12	11	1.09
9	Essex Co. Wilmington	G. Chase	15	11	1.36	10	10	1.00
10	Franklin Co. Lyon Brook	J. Hart	18	10	1.80	15	10	1.50
11	Hamilton Co. Indian Lake (Cedar R.)	L. Garland**	5	7	0.71	1	7	0.14
12	Onondago Co. Baldwinsville	J. Krull**	18	10	1.80	11	10	1.10

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Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>NEW YORK (continued)</u>								
14	Jefferson Co. Ives St. Rd.	S. Northrup	4	2	2.00	--	--	--
15	Oswego Co. Happy Valley	H. Weiskotten	7	7	1.00	17	8	2.13
16	Saratoga Co. Reynolds Corner	D. Lynch	1	7	0.14	0	6	0.00
22	Washington Co. Adamsville	D. Lynch	1	8	0.13	1	8	0.13
24	Jefferson Co. Rodman	S. Northrup	8	5	1.60	--	--	--
25	Wayne Co. Wayne Center	R. Cottrell	10	6	1.67	10	6	1.67
26	Chautauqua Co. Ashville	G. Noble	4	9	0.44	4	9	0.44
27	Chautauqua Co. Gerry	G. Noble	4	9	0.44	4	10	0.40
28	Tompkins Co. Conn. Hill #1	R. Cameron	1	10	0.10	7	8	0.88
29	Tompkins Co. Conn. Hill #2	R. Cameron	4	7	0.57	6	11	0.55
30	Tompkins-Schuyler Conn. Hill #3	Cos. R. Cameron	5	10	0.50	9	10	0.90
31	Tompkins-Schuyler Conn. Hill #4	Cos. R. Cameron	5	7	0.71	9	7	1.29
32	Suffolk Co. Southampton	W. Harris**	--	--	--	17	11	1.55
33	Cattaraugus Co. Red House	W. Shirey	11	12	0.92	8	12	0.67
34	Cattaraugus Co. Wayman Branch	F. Evans	5	11	0.45	3	11	0.27
35	Chautaugua-Cattaraugus Dredge Ditch Rd. C. Mount	Cos.	6	11	0.55	4	10	0.40

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Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>NEW YORK (continued)</u>								
36	Dutchess Co. Shenandoah	M. Rodak	6	9	0.67	6	9	0.67
38	Steuben Co. Demons Pond	F. Slater	6	6	1.00	8	6	1.33
39	Suffolk Co. Manorville	G. Raynor	9	9	1.00	9	9	1.00
40	Rensselaer Co. Cherry Plain	E. King	5	11	0.45	8	11	0.73
41	Suffolk Co. Fort Salonga	E. Mudge	5	5	1.00	4	6	0.67
42	Wayne Co. Huckleberry Swamp	R. Cottrell	14	6	2.33	12	6	2.00
43	Wayne Co. No. Wolcott	R. Cottrell	10	6	1.67	10	6	1.67
44	Suffolk Co. Peconic R.	F. Pradon	4	11	0.36	6	11	0.55
45	Clinton Co. True Brook	G. Chase	7	14	0.50	8	14	0.57
46	Franklin, Essex, & Clinton Cos. French's Brook	H. Delafield	17	10	1.70	0	9	0.00
47	Chautauqua Co. Stockton	G. Noble	5	10	0.50	3	9	0.33
48	Franklin Co. Cooks Corner	M. Orcutt	--	--	--	16	12	1.33*
49	Essex Co. Elizabethtown	W. Buckley	--	--	--	7	9	0.78*
TOTALS (unadjusted) 38 routes			247	300	0.82	256	327	0.78
<u>NORTH CAROLINA</u>								
2	Burke Co. Glen Alpine	J. Collins	3	6	0.50	--	--	--

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** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
NORTH CAROLINA (continued)								
3	Burke Co. Southern R.R.	J. Collins	0	8	0.00	2	8	0.25
12	Columbus Co. Boardman	J. Bardwell	--	--	--	0	9	0.00
13	Beaufort Co. Market St.	A. Noltemeier & O. Florschutz	2	8	0.25	5	9	0.56
18	Davidson-Montgomery Cos. Old Tuckertwn. Rd.	D. Taylor	0	9	0.00	0	9	0.00
22	Davie Co. Farmington	T. Cherry	1	6	0.17	0	6	0.00
23	Chowan Co. Fish Hatchery	G. Burdick	2	7	0.29	0	7	0.00
24	Chowan Co. Old Marine Base	G. Ross	1	8	0.13	0	7	0.00
26	Brunswick Co. Winnabow	C. Plant	1	13	0.08	2	9	0.22
27	Davidson Co. 4-mile Branch	M. Cecil	4	9	0.44	5	9	0.56
28	Dare & Hyde Cos. Englehard	T. Carter	2	10	0.20	1	10	0.10
29	Bertie Co. Chowan River	G. Burdick	5	7	0.71	0	7	0.00
30	Lenoir Co. Falling Creek	S. Poole	0	14	0.00	0	14	0.00
31	Alamance Co. Caswell	R. Eggleston	--	--	--	4	10	0.40*
TOTALS (unadjusted) 14 routes			21	105	0.20	19	114	0.17

NOVA SCOTIA

5	Annapolis Co. Beaconsfield	M. Bent	3	11	0.27	3	12	0.25
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* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
NOVA SCOTIA (continued)								
6	Annapolis Co. Wilmot	M. Bent	1	7	0.14	1	7	0.14
8	Annapolis Co. Douglas Rd.	M. Bent	0	11	0.00	--	--	--
9	Cumberland Co. Boars Back Rd. (south)	D. Lawson	15	11	1.36	13	11	1.18
15	Kings Co. Lake George Rd.	D. Dodds	2	7	0.29	5	8	0.63
21	Cumberland Co. Boars Back Rd. (north)	D. Lawson	12	11	1.09	13	11	1.18
24	Kings Co. Aldershot	F. Payne	5	10	0.50	--	--	--
27	Kings Co. New Ross Rd.	F. Payne	8	11	0.73	--	--	--
29	Cape Breton Co. Mira River	L. Willett	4	10	0.40	--	--	--
31	Digby Co. Long Island	H. Thurber	5	12	0.42	--	--	--
47	Annapolis Co. Morse Rd.-Bridgetown	M. Bent	1	11	0.09	--	--	--
48	Annapolis Co. Leonard & Saunders Rd.	M. Bent	1	11	0.09	--	--	--
49	Annapolis Co. New Albany-Dalhonsie	M. Bent	0	13	0.00	--	--	--
50	Colchester Co. Harmony Rd.	W. Woodworth	9	6	1.50	--	--	--
51	Colchester Co. Salmon River Rd.	W. Woodworth	10	5	2.00	--	--	--
52	Digby Co. Brier Island	H. Thurber	7	7	1.00	--	--	--
53	Kings Co. Halls Harbor	H. Thurber	7	8	0.88	3	6	0.50
54	Lunenburg Co. Blandford	F. Payne	3	9	0.33	--	--	--

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
NOVA SCOTIA (continued)								
55	Yarmouth Co. Chebogne-Airport	A. Francis	6	9	0.67	--	--	--
56	Yarmouth Co. Overton-Robbins Lake	A. Francis	4	8	0.50	5	8	0.63
57	Yarmouth Co. Bunker Lake	A. Francis	9	8	1.13	6	8	0.75
58	Yarmouth Co. Wellington-Sandford	A. Francis	5	8	0.63	8	8	1.00
59	Yarmouth Co. North Kemptville	R. Gates	9	8	1.13	12	8	1.50
60	Yarmouth Co. Kemptville	R. Gates	8	8	1.00	7	8	0.88
61	Yarmouth Co. Canaan	A. Sweeney	9	8	1.13	--	--	--
62	Yarmouth Co. Brenton	A. Sweeney	15	9	1.67	9	9	1.00
63	Yarmouth Co. Wellington-Short's Beach	A. Francis	6	8	0.75	7	8	0.88
64	Yarmouth Co. Greenville-Brooklyn	A. Francis	11	8	1.38	7	8	0.88
65	Yarmouth Co. Brooklyn	A. Francis	6	8	0.75	4	8	0.50
66	Yarmouth Co. Beaver River-Brenton	A. Francis	8	8	1.00	8	8	1.00
67	Yarmouth Co. Forest Glen-Richfield	A. Francis	6	8	0.75	6	8	0.75
68	Yarmouth Co. Carleton-Forest Glen	A. Francis	10	8	1.25	10	8	1.25
69	Yarmouth Co. Mill Lake	A. Sweeney	9	8	1.13	6	8	0.75
70	Yarmouth Co. Springhaven	A. Sweeney	12	8	1.50	8	8	1.00
71	Yarmouth Co. Eel Lake	A. Sweeney	7	8	0.88	13	8	1.63

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
NOVA SCOTIA (continued)								
72	Yarmouth Co. Somes Lake	A. Sweeney	11	8	1.38	13	8	1.63
73	Yarmouth Co. Moods Mill Rd.	A. Sweeney	--	--	--	13	8	1.63*
TOTALS (unadjusted) 37 routes			244	317	0.77	180	192	0.94
OHIO								
2	Ashtabula Co. Dorset	M. Gilfillan	6	4	1.50	--	--	--
3	Ashtabula Co. Morgan	M. Gilfillan	9	6	1.50	--	--	--
4	Ashtabula Co. Andover	M. Gilfillan	26	10	2.60	13	9	1.44
5	Ashtabula Co. Ashtabula	M. Gilfillan	23	11	2.09	19	11	1.73
9	Fulton-Lucas Cos. Maumee Forest	W. Fuchs**	6	9	0.67	5	11	0.45
17	Erie Co. Resthaven	R. Guilkey**	8	12	0.67	9	7	1.29
19	Delaware Co. Delaware Dam #1	R. Chambers	2	6	0.33	--	--	--
21	Erie Co. Resthaven #1	R. Guilkey**	16	11	1.45	23	9	2.56
22	Erie Co. Resthaven #2	R. Guilkey**	11	8	1.38	7	5	1.40
25	Delaware Co. Delaware Dam #2	E. Hutchins	7	8	0.88	5	9	0.56
27	Delaware Co. Delaware Dam #3	E. Hutchins	6	8	0.75	3	9	0.33
30	Ottawa Co. Ottawa NWR	A. Manke	2	8	0.25	--	--	---

* New route run in 1965

** 1965 observer; see last year's report for previous observer

Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
Ohio (continued)								
31	Ottawa Co. Tonsaint	K. Bednarik	6	14	0.43	4	8	0.50
32	Ottawa Co. Magee Marsh	K. Bednarik	15	13	1.15	12	10	1.20
33	Delaware Co. Inskip's Corners	R. Chambers	--	--	--	--	--	--
TOTALS (unadjusted) 15 routes			143	128	1.12	106	95	1.12
ONTARIO								
7	Frontenac Co. Westbrook	W. Lamb	9	7	1.29	8	7	1.14
9	Frontenac Co. Holleford	Mrs. H. Quilliam	4	7	0.57	3	7	0.43
10	Frontenac Co. Collins Creek	A. Bell	3	6	0.50	--	--	--
14	Frontenac Co. Sharpton	A. Bell	7	10	0.70	--	--	--
15	Parry Sound Dist. HWY 69	J. Leach	10	7	1.43	--	--	--
16	Parry Sound Dist. HWY 124	J. Leach	10	7	1.43	--	--	--
17	Parry Sound Dist. Rankin Lake Rd.	J. Leach	7	7	1.00	--	--	--
18	Parry Sound Dist. Swamp Road	A. Ramsay	10	8	1.25	--	--	--
19	Parry Sound Dist. Game Preserve	Sinclair	5	7	0.71	--	--	--
20	Parry Sound Dist. North Road	E. Bain	4	7	0.57	--	--	--
21	Parry Sound Dist. East Road	E. Bain	2	7	0.29	--	--	--
TOTALS (unadjusted) 11 routes			71	80	0.89	11	14	0.79

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Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
PENNSYLVANIA								
1	Centre Co. Barrens	R. Wingard	13	11	1.18	11	10	1.10
2	Huntingdon Co. Stone Valley	J. Lindzey	20	8	2.50	12	8	1.50
3	Blair Co. Bald Eagle	H. Henry	17	10	1.70	16	10	1.60
4	Centre Co. Port Matilda	L. Mansell	15	10	1.50	--	--	--
5	Centre Co. Martha Furnace	S. Liscinsky	13	10	1.30	6	10	0.60
6	Centre Co. Julian	S. Liscinsky	7	8	0.88	9	9	1.00
8	Mifflin Co. Atkinson Mills	J. Taylor	8	8	1.00	8	8	1.00
9	Juniata Co. Mifflin	W. Taylor	--	--	--	2	4	0.50
11	Centre Co. New Bloomfield	J. Sitlinger	3	8	0.38	3	8	0.38
13	Westmoreland Co. Ardara	J. Liss	4	5	0.80	2	5	0.40
14	Huntingdon Co. Neff Mills	R. Melton & C. Goho	7	8	0.88	11	8	1.38
15	Pike Co. Blooming Grove	A. Kriefski	6	8	0.75	6	8	0.75
19	Indiana Co. Penn Run	A. Zaycosky	5	7	0.71	5	7	0.71
20	Lackawanna Co. Thornhurst	J. Altmiller	7	12	0.58	6	10	0.60
21	Luzerne Co. Freeland	S. Laputka	6	8	0.75	5	8	0.63
22	Crawford Co. Geneva	H. Pratt	4	6	0.67	5	6	0.83

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Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
<u>PENNSYLVANIA (continued)</u>								
29	Erie-Crawford Cos. Albion	E. Baker	10	9	1.11	10	9	1.11
32	Mercer Co. Sharpsville	D. Carbone	5	7	0.71	9	8	1.13
35	Tioga Co. Fall Brook	A. Hayden	12	14	0.86	10	14	0.71
38	Indiana Co. Aultman Run	A. Zaycosky	11	10	1.10	13	10	1.30
39	Indiana Co. Clarksburg	A. Zaycosky	9	11	0.82	9	10	0.90
40	Centre Co. Romola	W. Richter	4	8	0.50	3	8	0.38
43	Jefferson Co. Falls Creek	S. Liscinsky	10	10	1.00	9	10	0.90
44	Luzerne Co. Drums	S. Laputka	8	10	0.80	--	--	--
46	Crawford Co. Linn Rd.	E. Baker	15	8	1.88	18	8	2.25
47	Blair Co. Canoe Creek	P. Miller	9	10	0.90	11	11	1.00
48	Perry Co. New Germantown #2	J. Sitlinger**	--	--	--	5	12	0.42
49	Blair Co. PRR Bald Eagle Creek	P. Miller	28	8	3.50	22	6	3.67
TOTALS (unadjusted) 28 routes			256	232	1.10	226	225	1.00
<u>PRINCE EDWARD ISLAND</u>								
4	Prince Co. Conway Rd.	D. Bartlett	14	9	1.56	7	9	0.78
5	Kings Co. Martinvale	P. Neary**	4	9	0.44	5	9	0.56
6	Kings Co. Fortune	D. Power	8	9	0.89	--	--	--

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Table 7.--Comparison of individual woodcock singing-ground routes, 1964 and 1965

Rt. No.	County and locality	Observer	1964			1965		
			Total birds	Total stops	Birds/ stop	Total birds	Total stops	Birds/ stop
PRINCE EDWARD ISLAND (continued)								
8	Queens Co. Pointe De Roche	D. Power**	2	9	0.22	5	9	0.56
TOTALS (unadjusted) 4 routes			28	36	0.78	17	27	0.63
VERMONT								
7	Franklin Co. Swanton #1, Maquam Rd.	E. Chandler	13	11	1.18	8	11	0.73
14	Franklin Co. Swanton #2, Rt. 78	R. Minns	12	8	1.50	2	8	0.25
19	Chittenden Co. Pleasant Valley	B. Parker	13	12	1.08	20	14	1.43
22	Chittenden Co. Westford	B. Parker	9	11	0.82	18	14	1.29
23	Franklin Co. Highgate	A. Vanslette	6	6	1.00	4	6	0.67
TOTALS (unadjusted) 5 routes			53	48	1.10	52	53	0.98
WEST VIRGINIA								
1	Randolph Co. Kumbrabow Forest	J. Chadwick	5	7	0.71	6	7	0.86
2	Grant Co. Bayard to Henry	T. Sanford	4	12	0.33	6	12	0.50
3	Pocahontas Co. Thorny Creek Rd.	R. Bailey	2	6	0.33	9	7	1.29
7	Tucker Co. State Route 32	W. Lesser	5	6	0.83	4	6	0.66
8	Nichols Co. Routes 19 & 41	S. Lester	1	14	0.07	3	9	0.33
10	Preston Co. Lake O'Woods	R. Bailey	0	6	0.00	3	6	0.50

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**UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WASHINGTON, D. C. 20240**

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